

**REMARKS**

The Final Office Action mailed August 1, 2008, has been received and reviewed. Claims 1, 3 through 9, and 11 through 23 are currently pending in the application. Claims 1, 3 through 9, and 11 through 23 stand rejected. Applicant has amended claims 1 and 16, and respectfully requests reconsideration of the application as amended herein.

**35 U.S.C. § 103(a) Obviousness Rejections**

Obviousness Rejection Based on U.S. Patent Publication No. 2004/0025791 to Chen et al. in view of U.S. Patent No. 5,716,534 to Tsuchiya et al. and U.S. Patent No. 6,756,311 to Suzuki

Claims 1, 3 through 9, and 11 through 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen et al. (U.S. Patent Publication No. 2004/0025791) in view of Tsuchiya et al. (U.S. Patent No. 5,716,534) and Suzuki (U.S. Patent No. 6,756,311). Applicant respectfully traverses this rejection, as hereinafter set forth.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, the Examiner must determine whether there is “an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Further, rejections on obviousness grounds “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id* at 1741, quoting *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006). Finally, to establish a *prima facie* case of obviousness there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common knowledge, or the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

The 35 U.S.C. § 103(a) obviousness rejections of claims 1, 3-9, and 11-23 are improper because the elements for a prima facie case of obviousness are not met. Specifically, the rejection fails to meet the criterion that the prior art references must teach or suggest all the claims limitations.

### **Independent Claims 1 and 16**

Regarding independent claims 1 and 16 and claims 3-9, 11, 13-15, 17, 23 depending therefrom, Applicant has amended independent claims 1 and 16 to include claim limitations not taught or suggested in the cited references.

Applicant's independent claim 1, as presently amended, recites:

1. A plasma reactor, comprising:  
first, second and third power generators wherein the first power generator is coupled to an upper electrode and **the second and third power generators are coupled to a lower electrode** for supporting a wafer thereon, the first, second and third power generators being frequency-based power generators; **and**  
a controller **configured to individually selectively activate the first, second and third power generators to a plurality of activation configurations** during a plurality of phases of a duty cycle of a process, **wherein at least one of the plurality of activation configurations includes differently activating the second and third power generators to generate at least two different active states on the lower electrode**;  
wherein each of the second and third power generators are configured to apply energy **directly** to the lower electrode **entirely** to generate the at least two different active states thereon. (Emphasis added.)

Applicant's independent claim 16, as presently amended, recites:

16. A plasma reactor, comprising:  
a vacuum chamber including upper and lower electrodes therein;  
first, second and third power generators wherein the first power generator is coupled to an upper electrode and **the second and third power generators are coupled to a lower electrode** for supporting a wafer thereon, the first, second and third power generators being frequency-based power generators; **and**  
a controller **configured to individually selectively activate the first, second and third power generators to a plurality of activation configurations** during a plurality of phases of a duty cycle of a process, **wherein at least one of the plurality of**

**activation configurations includes differently activating the second and third power generators to generate at least two different active states on the *lower electrode*;**

wherein each of the second and third power generators are configured to apply energy ***directly*** to the lower electrode ***entirely*** to generate the at least two different active states thereon. (Emphasis added.)

While the Final Office Action, dated August 1, 2008, attempts to combine Chen, Tsuchiya, and Suzuki, these references, either alone or in combination, still do not teach or suggest all of the claim limitations of Applicant's invention as previously claimed and as now presently amended. Specifically, neither of these references teaches or suggests differently activating the second and third power generators to generate **at least two different active states** on the *lower* electrode. In the Final Office Action, the Examiner states:

Chen et al do not teach a controller configured to individually selectively activate the first, second and third power generators to a plurality of activation configurations during a plurality of phases of a duty cycle of process, wherein at least one of the plurality of activation configurations includes differently activating the second and third power generators to generate at least two different active states on the *lower electrode*. *Final Office Action*, Page 3. (Emphasis added).

Furthermore, on page 4 of the Final Office Action, the Examiner states "Tsuchiya et al do not teach the controller is configured such that at least one of the plurality of activation configurations includes differently activating two power generators (second and third generators) that are connected to the *same (lower)* electrode." (Emphasis added).

Moreover, it is respectfully submitted that Suzuki lacks any teaching or suggestion of activating the second and third power generators to generate **at least two different active states** on the *lower* electrode. Rather, Suzuki teaches a single generator 36 coupled to substrate holder 14 configured to hold a semiconductor wafer 34 to be etched. Suzuki also teaches that a timing controller 22 can independently activate microwave generators 18*a* and 18*b* to transmit microwaves A and B through respective wave guides 24*a* and 24*b* to separate portions (16*a* and 16*b*) of chamber 16. As stated by the Examiner on page 5 of the Office Action, Suzuki does not explicitly teach that the controller 22 can control two generators so as to generate at least two different active states on the same electrode. The Applicant agrees. Additionally, it appears to the

the Applicant that not only does Suzuki lack any description of generating two different active states on the lower electrode, but also Suzuki does not even describe two generators coupled to a single electrode. As such, Suzuki cannot and does not teach or suggest activating the second and third power generators to generate **at least two different active states** on the **lower** electrode.

Although the Examiner has argued that it would have been obvious to combine the elements of the references to arrive at the claimed invention, the Examiner is respectfully reminded that to establish a *prima facie* case of obviousness, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Neither Chen nor Tsuchiya nor Suzuki even teach or suggest generating *at least two different active states on single electrode*. As such, the claim limitation of activating the second and third power generators to generate **at least two different active states** on the **lower** electrode is *not* taught in the references cited by the Examiner.

Furthermore, the cited references lack any teaching or suggestion of the two generators being configured to independently apply energy **directly** to the lower electrode **entirely** to generate the at least two different active states thereon. As discussed above, neither Chen nor Tsuchiya nor Suzuki even teach or suggest generating at least two different active states on a single electrode. Moreover, Chen and Tsuchiya, either alone or in combination, lack any teaching or suggestion of independently applying energy to a single electrode from distinct generators to generate two different active states. Furthermore, although Suzuki teaches that a timing controller 22 can independently activate microwave generators 18*a* and 18*b* to transmit microwaves A and B through respective wave guides 24*a* and 24*b* to separate portions (16*a* and 16*b*) of chamber 16, Suzuki lacks any teaching or suggestion of applying energy directly to a electrode or applying energy to a electrode entirely. Assuming, for the sake of argument, that Suzuki was transmitting microwaves A and B to an electrode in chamber 16, the microwaves would not be applied *directly* to the electrode but, rather, would be transmitted into chamber 16. Furthermore, because microwave generators 18*a* and 18*b* are configured to transmit microwaves A and B through respective wave guides 24*a* and 24*b* to separate portions (16*a* and 16*b*) of chamber 16, microwaves A & B would not be applied to an electrode *entirely*, but, rather microwave A would

microwave A would be applied to a portion of the electrode and microwave B would be applied to another other portion of the electrode. Therefore, the cited references, either alone or in combination, lack any teaching or suggestion of the second and third power generators being configured to independently apply energy *directly* to the lower electrode *entirely* to generate the at least two different active states.

Therefore, since neither Chen nor Tsuchiya nor Suzuki teach or suggest Applicant's claimed invention including the element of "differently activating the second and third power generators to generate at least two different active states on the lower electrode", or the element of "wherein each of the second and third power generators are configured to independently apply energy directly to the lower electrode entirely to generate the at least two different active states thereon," these references, either individually or in any proper combination, cannot render obvious, under 35 U.S.C. §103, Applicant's invention as presently claimed in amended independent claims 1 and 16. Accordingly, Applicant respectfully requests the rejections of presently amended independent claims 1 and 16 be withdrawn.

### **Dependent Claims 3-9 and 11-23**

The nonobviousness of independent claim 1 precludes a rejection of claims 3-9, 11 and 13-15 which depend therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claim 1 and claims 3-9, 11 and 13-15 which depend therefrom.

The nonobviousness of independent claim 16 precludes a rejection of claims 17-23 which depend therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claim 16 and claims 17-23 which depend therefrom.

**CONCLUSION**

Claims 1, 3-9 and 11-23 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'KKJ', with a long horizontal flourish extending to the right.

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